

Title: NOVEL
MEGAKARYOCYTIC PROTEIN
TYROSINE KINASES
Inventor(s): Axel ULLRICH et al.
Appl. No.: 09/977,261

09/977,261 09/97/02

CTCGCTCCAAGTTGTCAGCCGGACCGCTCGGGTGTCAGCCGCTCGCGAGCCCTCTCGGGCGGGCGGGCGGGCTCGGG 90
GGCCCCCTGAGCAGAAACAGGAAGAACAGGCTCGGTCCAGTGGCAGCCAGCTCCCTACCTCCTGTGCCAGCCGCTGGCCTGTGGA 180
GGCCATTCCCAGCGTCCCCGACTGTGACCACTTGCTCAGTGTGCTCTCACCTGCCTCAGTTCCCTCTCGGGGGCGATGGCGGGCGAG 270
M A G R

GCTCTCGTTTCTCGGGGCAATTCACGGCTGTGATTCTGCTGAGGAAGTTCCCCGGTGAGCCCCGCTTCTCCGAGCCTGGCACC 360
G S L V S W R A F H G C D S A E E L P R V S P R F L R A W H

CCCCTCCGCTCTCAGCCAGGATGCCAAGAGCGCTGGGCCCCGGGACCCAGTGTATCACCAATCGGAGCACACCCGCCCAAGCCAG 450
P P P V S A R M P T R R W A P G T Q C I T K C E H T R P K P

GGGAGCTGCCCTTCGCAAGGGCGACGTGGTCACCATCTGGAGCCCTGGGAGAACAAGAGCTGGTACCGCGTCAAGCACCACACCACTG 540 SH 3
G E L A F R K G D V V T I L E A C E N K S W Y R V K H H T S

GACAGGAGGGCTGCTGGCAGCTGGGGCGCTGGGGAGCGGAGGCCCTCTCCGAGACCCCAAGCTCAGCCTCATGCCGTGGTTCCAGG 630
G Q E G L L A A G A L R E R E A L S A D P K L S L M P W F H

GGAAGATCTCGGGCAGGAGCTGTCCAGCAGCTGCAGCCTCCCGAGGATGGGCTGTCTCGGTGGGAGTCCGCGGCCACCCGGCG 720
G K I S G Q E A V Q Q L Q P P E D G L F L V R E S A R H P G SH 2

ACTACGTCCTGTGGTGAGCTTTGGCGCGACGTATCCACTACCGGCTGTCACCGCGAGCGCCACCTCACAATCGATAGCGCGTGT 810
D Y V L C V S F G R D V I H Y R V L H R D G H L T I D E A V

TCTTCTGCAACCTCATGCACATGTCGAGCATTACAGCAAGGACAAGCGGCTATCTGCACCAAGCTGGTGAGACCAAGCGGAAACAG 900
F F C N L M D M V E H Y S K D K G A I C T K L V R P K R K H

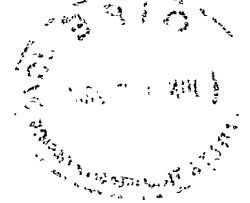
FIG.1A

#4

FIG. 1 B

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977261-060202

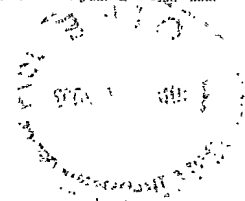


CAGGTGCCCCAGCCTCCGTCTCAGGGCAGGACGCCGACGGCTCCACCTGCCCCGAAGCCAGGAGCCCTGACCCACCCGGTGGGGCCCT 1800
A G A P A S V S G Q D A D G S T S P R S Q E P
TGGCCCCAGAGACCGAGAGAGTGGAGAGTGGCGCGTGGGGGCACTGACCAGGCCCAAGGAGGTCCAGGCGGGCAAGTCATCCTCCTGG 1890
TGCCACAGCAGGGGCTGGCCACGTAGGGGCTCTGGCGGGCCGTTGACACCCACACCTGCCAAGGATGATGCCCCGATAAAGACCG 1980
ATTCTAAGGACTCTAAAAA 2000

FIG.1C

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CCGCTTTTTCCTTAGAGCTTGAGAGTCAAAG AGGACCCACATGTATACTTCGGCTCTAGCGAGT AGGATGATAATGGATACA 90
M D T

AAATCTATTCTAGAAGAACTTCTTCTCAAAAGATCACAGCAAAAGAAGAAAATGTCACCAAAATAATTACAAAGAACGGCTTTTGTGTTG 180
K S I L E E L L L K R S Q Q K K K M S P N N Y K E R L F V L

ACCAAAACAAACCTTTCCTACTATGAATATGACAAATGAAAAGGGCAGCAGAAAAGGATCCATTGAAATTAAGAAAATCAGATGTGTG 270
T K T N L S Y Y E Y D K M K R G S R K G S I E I K K I R C V

GAGAAAGTAAATCTCGAGGAGCAGACGCCCTGTAGAGAGACAGTACCCATTCAGATTGTCTATAAGATCGGCTTCTCTATGTCTATGCA 360
E K V N L E E Q T P V E R Q Y P F Q I V Y K D G L L Y V Y A PH

TCAATGAAGAGAGCCGAAGTCAGTGGTTGAAAGCATTACAAAAGAGATAAGGGTAACCCCCACCTGCTGCTCAAGTACCATAGTGGG 450
S N E E S R S Q W L K A L Q K E I R G N P H L L V K Y H S G

TTCTTGTGCGACGGGAAGTTCCTGTGTGCCAGCAGAGCTGTAAGCAGCCCCAGGATGTACCTCTCGGAAGCATATGCTAATCTGCAT 540
F F V D G K F L C C Q Q S C K A A P G C T L W E A Y A N L H

ACTGCAGTCAATGAAGAGAAACACAGAGTTCACCTTCCCAGACAGAGTGTGAAGATACCTCGGCAGTTCTGTCTCAAAATGGAT 630
T A V N E E K H R V P T F P D R V L K I P R A V P V L K M D

GCACCATCTTCAAGTACCACTCTAGCCCAATATGACAACGAATCAAAGAAAACTATGGCTCCCAGCCACCATCTTCAAGTACCACTCTA 720
A P S S S T T L A Q Y D N E S K K N Y G S Q P P S S S T S L SH3

GCCCAATATGACAGCAACTCAAAGAAAATCTATGGCTCCCAGCCAACTTCAACATGCAGTATATTCCAAGGAAGACTTCCCTGACTGG 810
A Q Y D S N S K K I Y G S Q P N F N M Q Y I P R E D F P D W

TGCCAAGTAAGAAAAGTAAAAGTAGCAGCAGCAGTGAAGATGTTGCAAGCAGTAACCAAAAAGAAAGAAATGTGAATCACACCACCTCA 900
W Q V R K L K S S S S S S E D V A S S N Q K E R N V N H T T S

AAGATTTTCATCGGAATTCCTGAGTCAAGTTCATCTGAAGAAGAGGAAAACCTCGATGATTATGACTGCTTTGCTGGAACATCTCCAGA 990
K I S W E F P E S S S S S E E E E N L D D Y D W F A G N I S R

TCACAATCTGAACAGTTACTCAGACAAAAGCGAAAAGAGGAGCATTATGTTAGAAATTCAGCCAAGTGGGAATGTACACAGTGTCC 1080
S Q S E Q L L R Q K G K E G A F M V R N S S Q V G M Y T V S SH4

TTATTTAGTAAGCTGTGAATGATAAAAAAGGAAGTGTCAACATTACCAGTGCATACAAATGCTGAGAACAAATTATACCTGGCAGAA 1170
L F S K A V N D K K G T V K H Y H V H T N A E N K L Y L A E

FIG.2A

AACTACTGTTTGGATTCCATTCCAAAGCTTATTCATTATCATCAACACAATTACAGCAGCATGATCACACCGCTCCGCCACCTGTGTCA 1260
N Y C F D S I P K L I H Y H Q H N S A G M I T R L R H P V S

ACAAAGGCCAACAAGCTCCCCGACTCTGTGTCCCTGGGAAATGGAATCTGGAACTGAAAAGAGAAGATTACCTTGTTCAGAGCTG 1350
T K A N K V P D S V S L G N G I W E L K R E E I T L L K E L

GGAAGTGGCCAGTTTGGAGTGGTCCAGCTGGGCAAGTGAAGGGCAGTATGATGTTGCTGTTAAGATGATCAAGGAGGCTCCATGTCA 1440
G S G Q F G V V Q L G K W K G Q Y D V A V K M I K E G S M S

GAAGATGAATTCCTTCAGGAGGCCAGACTATGATGAACTCAGCCATCCCAAGCTGGTTAAATTCTATGGAGTGTGTTCAAAGCAATAC 1530
E D E F F Q E A Q T M M K L S H P K L V K F Y G V C S K E Y

CCCATATACATAGTGAATATATAAGCAATGGCTGCTTGTGAATTACCTGAGGAGTACCGAAAAGGACTTGAACCTTCCCAGCTC 1620 TK
P I Y I V T E Y I S N G C L L N Y L R S H G K G L E P S Q L

TTAGAAATGTCTACGATGTCTGTGAAGGCATGGCCTTCTTGGAGAGTACCAATTCATACACCGGAGTCTGGCTGCTCGTAAGTGTG 1710
L E M C Y D V C E G M A F L E S H Q F I H R D L A A R N C L

GTGGACAGAGATCTCTGTGTGAAGTATCTGACTTTGGAATGACAAGGTATGTTCTTGATGACCAGTATGTCAGTTCAGTCCGAACAAAG 1800
V D R D L C V K V S D F G M T R Y V L D D Q Y V S S V G T K

TTTCCAGTCAAGTGGTCCAGCTCCAGAGTGTTCATTACTTCAAATACAGCAGCAAGTACAGCTATGGGCATTTGGGATCCTGATGTGG 1890
F P V K W S A P E V F H Y F K Y S S K S D V W A F G I L M W

GAGGTGTTACGCTGGGGAAGCAGCCCTATGACTTGTATGACAACTCCAGGTGGTCTGAAGGTCTCCAGGGCCACAGCTTTACCGG 1980
E V F S L G K Q P Y D L Y D N S Q V V L K V S Q G H R L Y R

CCCCACCTGGCATCGGACACCATCTACCAGATCATGTACAGCTGCTGGCAGGAGCTTCCAGAAAAGCGTCCACATTTACGCAACTCCTG 2070
P H L A S D T I Y Q I M Y S C W H E L P E K R P T F Q Q L L

TCTTCATTGAACCACTTCGGGAAAAAGACAAGCATTGAAGAAGAAATTAGGAGTGTGATAAGAATGAATATAGATGCTGCCAGCATT 2160
S S I E P L R E K D K H .

TTCATTCATTTTAAGGAAAGTAGCAAGGCATAATGTAATTTAGCTAGTTTTTAATAGTGTCTCTGTATTGTCTATTATTTAGAAATGAA 2250

CAAGGCAGGAAACAAAAGATTCCCTTGAAATTTAGGTCAAATTAGTAATTTTGTATTGCTGCCCTGATATAACACTTTCCAGCCTATA 2340

GCAGAAGCACATTTTCAGACTGCAATATAGAGACTGTGTTATGTGTAAGACTGAGCAGAACTGAAAAATTACTTATTGGATATTCATT 2430

CTTTTCTTTATATTGTCATTGTGACACAATTAATACTACCAAGTACAAAAAAAAAAAAAAAAAAAA 2500

FIG.2B

CCGGACTGGTCGAAAGACAGGAACAGACTTGAACAGGGGAGAGCTCTGGCGAAACGAAGACGTCGAGTTTACCAGGGATAAGAAG 90
AAAGACACCTTCTAGTGAGCAGCTGCCAGCTCTGCTCAGTTTGCCTCGGGTAGCACCTCCAGCCACAGAAAGCAAGCCGTAAG 180
TCTCTCCAGGTAGGACTTGCTGCAACCCAGCTGCTGGACTGATCTGAAACGGGACTTTGCATACTCTCCGAAGTATGGTGAGTTGGTGCT 270
M V S W C
GACTTCAAAGTTGCTGGAAGGAAGATAAGCTGGATCGCAGAGACTAAGGGAGAGGGAGAAGCCCTGCTCCTTCTCCCCACCAAG 360
GCACAATGAGCAACATCTGTCAGAGCTCTCGGAGTACCTAGAACCCTATCTCCCTGTTTGTCCAGGGAGGCAGACAAGTCAACCGTGA 450
M S N I C Q R L W E Y L E P Y L P C L S T E A D K S T V
TTGAAATCCAGGGCGCTTTGCTCTCCCAGTCACAGAGGCATGCCACTACTTTGTGGCTTTGTTTGATTACCAGGCTCGGACTGCTG 540
I E N P G A L C S P Q S Q R H G H Y F V A L F D Y Q A R T A
AGGACTTGAGCTTCGAGCAGGTGACAACTTCAAGTTCTGGACACTTTGCATGAGGGCTGGTGGTTTCCAGACACTTGGAGAAAAGAC 630 SH 3
E D L S F R A G D K L Q V L D T L H E G W W F A R H L E K R
GAGATGGCTCCAGTCAGCAACTACAAGCTATATTCCTTCTAAGTGGCTGAGGACAGAAGCCTACAGGCAGAGCCGTCGTTCTTTG 720
R D G S S Q Q L Q G Y I P S N Y V A E D R S L Q A E P W F F
GAGCAATCCGAAGATCAGATGCAGAGAAACAACCTATTATTCAGAAAACAAGACCGGTTCTTTCTAATCAGAGAAAGTGAAGCCAAA 810
G A I G R S D A E K Q L L Y S E N K T G S F L I R E S E S Q SH 2
AAGGAGAATTCTCTCTTTAGATGGAGCAGTTGTAACACTACAGAATTAAGACTGGATGAAGGGGATTTTTTCTCAGGC 900
K G E F S L S V L D G A V V K H Y R I K R L D E G G F F L T
GAAGAAGAATCTTTCAACACTGAACGAATTTGTGAGCCACTACACCAAGACAAGTGACCGCCTGTGTGCAAGCTGGGAAACCATGCT 990
R R R I F S T L N E F V S H Y T K T S D G L C V K L G K P C
TAAAGATCCAGGTCCCAGCTCCATTTGATTGCTGATAAAACCGTCGACCAATGGGAGATAGACCGCAACTCCATACAGCTTCTGAAGC 1080
L K I Q V P A P F D L S Y K T V D Q W E I D R N S I Q L L K
GATTGGATCTGGTCAGTTTGGCGAAGTATGGGAAGGCTGTGGAACAATACCACTCCAGTAGCAGTGAAACATTAAACAGGTTCAA 1170
R L G S G Q F G E V W E G L W N N T T P V A V K T L K P G S
TGGATCCAAATGACTTCTGAGGGAGGCACAGATAATGAAGAACCTAAGACATCCAAAGCTTATCCAGCTTTATGCTGTTTGCACCTTAG 1260
M D P N D F L R E A Q I M K N L R H P K L I Q L Y A V C T L

FIG.3



		<u>MKK1</u>	<u>MKK2</u>
HUMAN			
MEG/ERYTH	MEG-01	+++	+++
	K562	++	+
	MO7E	++	+
	HEL	+++	++
MYELO/MAC	KG-1	+	++
	HL-60	+	+
	TF-1	+	+
B-CELL	ALL-1	-	+
	RAJI	-	-
	DAUDI	-	-
T-CELL	MOLT-3	-	-
	JURKAT	-	-
EPITHELIAL	HELA	-	-
RODENT			
	BM	+	+++
	SPLEEN	+++	+
	THYMUS	-	-
	LIVER	-	-
	BRAIN	+	-
RAT NEURAL	P19	+	-

FIG.4

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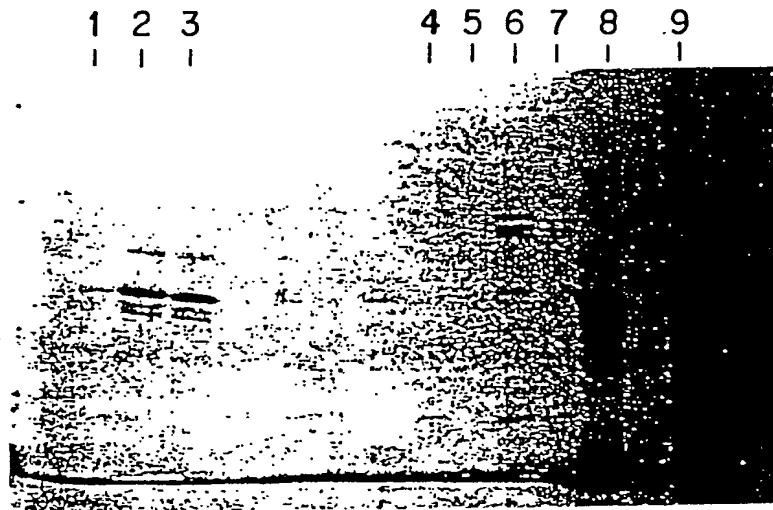
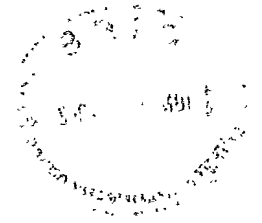


FIG. 5

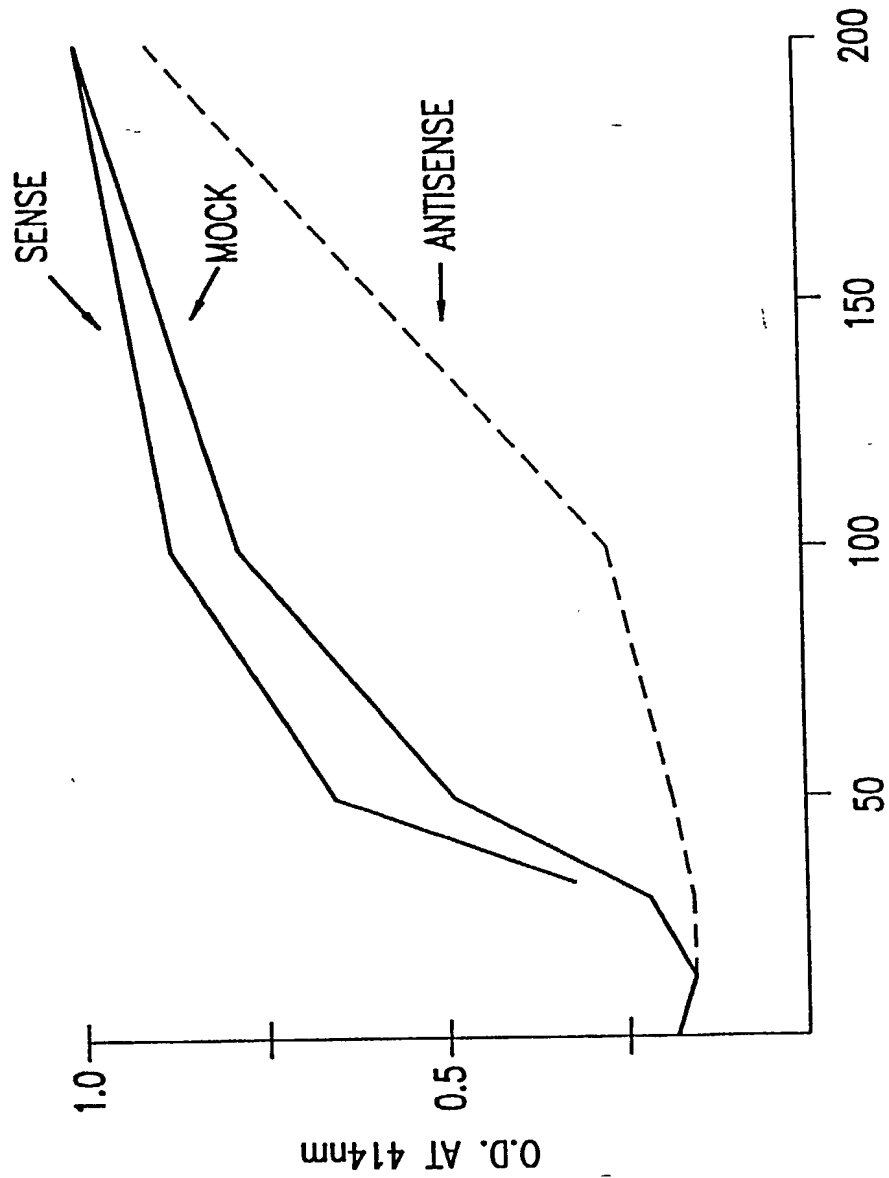
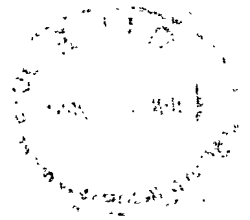


FIG. 6A

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MKKI PROTEIN EXPRESSION

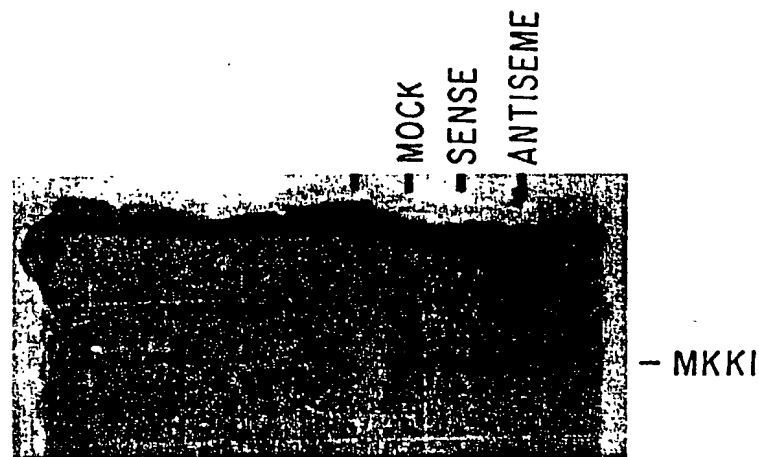


FIG. 6B

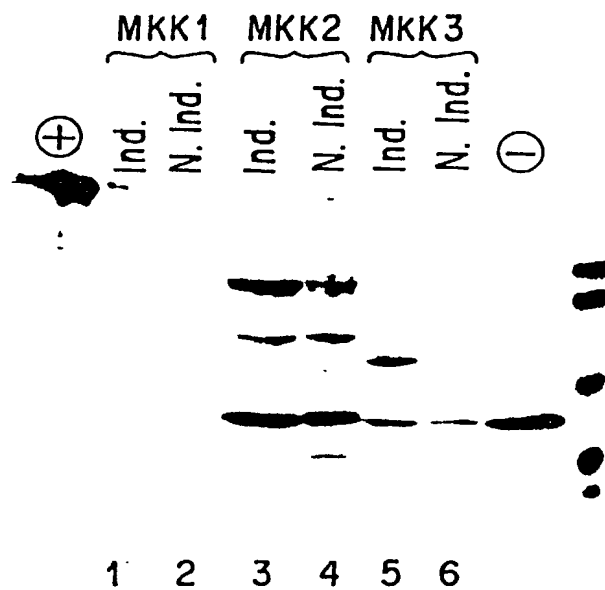
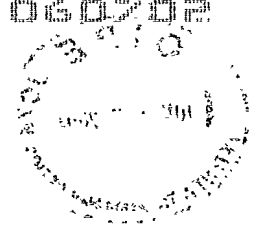


FIG. 7

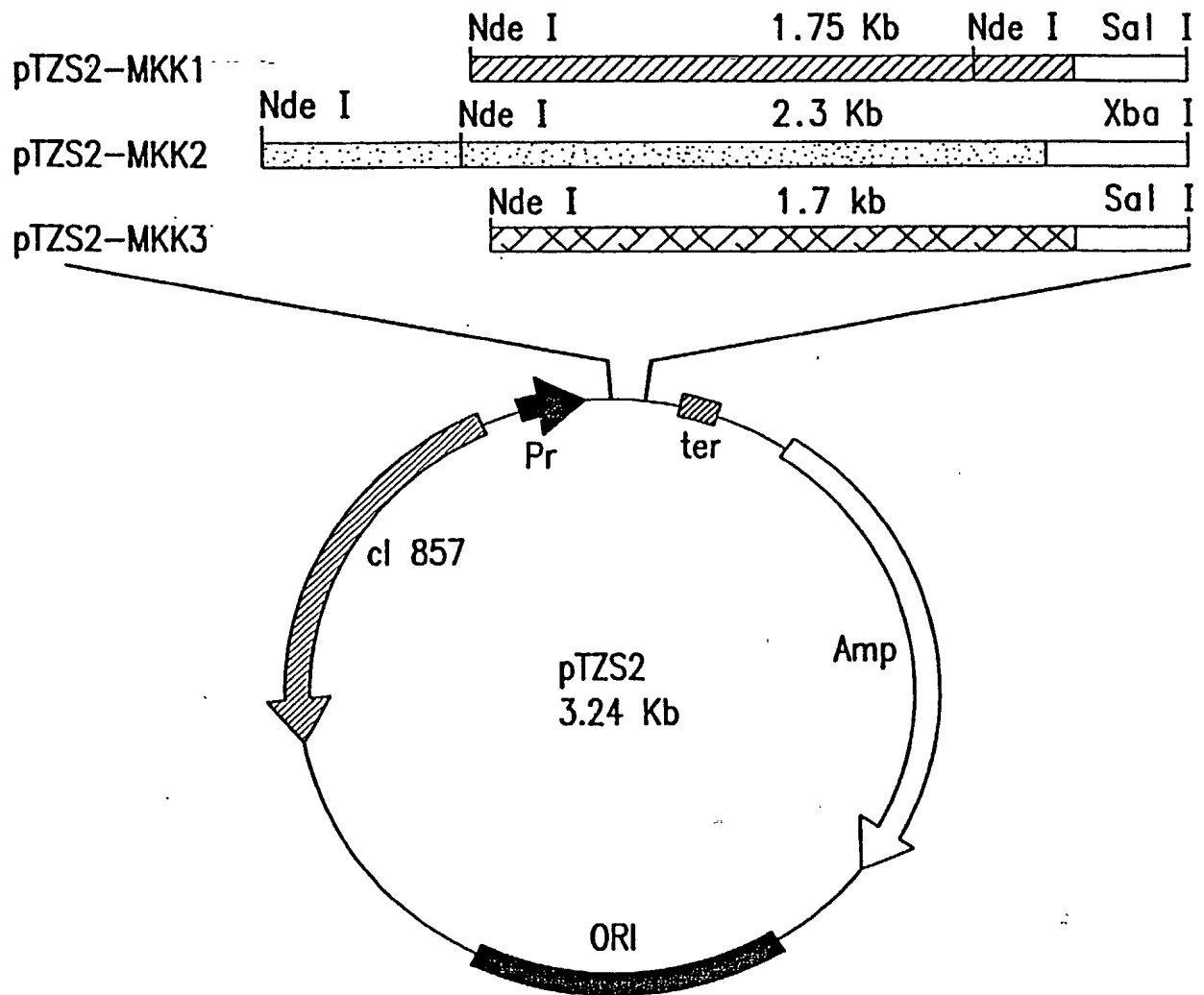
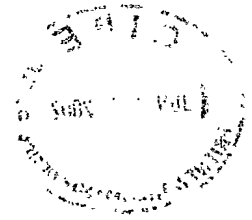


FIG.8



1	M A G R G S L V S W R A F H G C D S A E E L P R V S P R F L	MKK1 aa
1	M S A I Q A A - - - - -	hCSK (JH0559)
31	R A W H P P P V S A R M P T R R W A P G T O C I T K C E H T	MKK1 aa
8	- - - - - W P S G T E C I A K Y N F H	hCSK (JH0559)
61	R P K P G E L A F R K G D V V T I L E A C E N K S W Y R V K	MKK1 aa
22	G T A E Q D L P F C K G D V L T I V A V T K D P N W Y K A K	hCSK (JH0559)
91	H H T S G Q E G L L A A G A L R E R E A L S A D P K L S L M	MKK1 aa
52	N K V - G R E G I I P A N Y V Q K R E G V K A G T K L S L M	hCSK (JH0559)
121	P W F H G K I S G Q E A V Q Q L Q P P E D G L F L V R E S A	MKK1 aa
81	P W F H G K I T R E Q A E R L L Y P P E T G L F L V R E S T	hCSK (JH0559)
151	R H P G D Y V L C V S F G R D V I H Y R V L H R D G H L T I	MKK1 aa
111	N Y P G D Y T L C V S C D G K V E H Y R I M Y H A S K L S I	hCSK (JH0559)
181	D E A V F F C N L M D M V E H Y S K D K G A I C T K L V R P	MKK1 aa
141	D E E V Y F E N L M Q L V E H Y T S D A D G L C T R L I K P	hCSK (JH0559)
211	K R K H G T K S A E E E L A R A G W L L N L Q H L T L G A Q	MKK1 aa
171	K V M E G T V A A Q D E F Y R S G W A L N M K E L K L L Q T	hCSK (JH0559)
241	I G E G E F G A V L Q G E Y L G Q K V A V K N I K C D V T A	MKK1 aa
201	I G K G E F G D V M L G D Y R G N K V A V K C I K N D A T A	hCSK (JH0559)
271	Q A F L D E T A V M T K M Q H E N L V R L L G V I L H Q - -	MKK1 aa
231	Q A F L A E A S V M T Q L R H S N L V Q L L G V I V E E K G	hCSK (JH0559)
299	G L Y I V M E H V S K G N L V N F L R T R G R A L V N T A Q	MKK1 aa
261	G L Y I V T E Y M A K G S L V D Y L R S R G R S V L G G D C	hCSK (JH0559)
329	L L Q F S L H V A E G M E Y L E S K K L V H R D L A A R N I	MKK1 aa
291	L L K F S L D V C E A M E Y L E G N N F V H R D L A A R N V	hCSK (JH0559)
359	L V S E D L V A K V S D F G L A K A E R K G L D S S R L P V	MKK1 aa
321	L V S E D N V A K V S D F G L T K E A S S T Q D T G K L P V	hCSK (JH0559)

FIG.9A

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389	K W T A P E A L K H G K F T S K S D V W S F G V L L W E V F	MKK1 aa
351	K W T A P E A L R E K K F S T K S D V W S F G I L L W E I Y	hCSK (JH0559)
419	S Y G R A P Y P K M S L K E V S E A V E K G Y R M E P P E G	MKK1 aa
381	S F G R V P Y P R I P L K D V V P R V E K G Y K M D A P D G	hCSK (JH0559)
449	C P G P V H V L M S S C W E A E P A R R P P F R K L A E K L	MKK1 aa
411	C P P A V Y E V M K N C W H L D A A M R P S F L Q L R E Q L	hCSK (JH0559)
479	A R E L R S A G A P A S V S G Q D A D G S T S P R S Q E P	MKK1 aa
441	E H - - - - - I K T H E L H - - - - - L	hCSK (JH0559)

FIG.9B

1	M	D	T	K	S	I	L	E	E	L	L	K	R	S	Q	Q	K	K	K	M	S	P	N	N	Y	K	E	R	L	MKK2	aa		
1	M	A	A	-	V	I	L	E	S	I	F	L	K	R	S	Q	Q	K	K	T	S	P	L	N	F	K	K	R	L	hAtk	(X58957)		
1	M	N	N	F	I	L	L	E	E	Q	L	I	K	K	S	Q	Q	K	R	R	T	S	P	S	N	F	K	V	R	F	hTKT	(L10717)	
1	M	M	V	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	mTec	(X5663)	
31	F	V	L	T	K	T	N	L	S	Y	Y	E	-	-	Y	D	K	M	K	R	G	S	R	K	G	S	I	E	I	K	MKK2	aa	
30	F	L	L	T	V	H	K	L	S	Y	Y	E	Y	D	F	E	R	G	R	G	S	K	K	G	S	I	D	V	E	hAtk	(X58957)		
31	F	V	L	T	K	A	S	L	A	Y	F	E	D	R	-	-	H	G	K	K	R	T	L	K	G	S	I	E	L	S	hTKT	(L10717)	
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	mTec	(X5663)	
59	K	I	R	C	V	E	K	V	N	L	E	E	Q	T	P	V	E	R	Q	-	-	-	-	-	-	-	-	-	-	-	-	MKK2	aa
60	K	I	T	C	V	E	T	V	V	P	E	K	N	P	P	P	E	R	Q	I	P	R	R	G	E	E	S	S	E	M	hAtk	(X58957)	
59	R	I	K	C	V	E	I	V	K	S	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	hTKT	(L10717)	
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	mTec	(X5663)	
78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	MKK2	aa
90	E	Q	I	S	I	I	E	R	F	P	Y	P	F	Q	V	V	Y	D	E	G	P	L	Y	V	F	S	P	T	E	E	hAtk	(X58957)	
70	-	-	I	S	I	P	C	H	Y	K	Y	P	F	Q	V	V	H	D	N	Y	L	L	Y	V	F	A	P	D	R	E	hTKT	(L10717)	
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	mTec	(X5663)
98	S	R	S	Q	W	L	K	A	L	Q	K	E	I	R	G	N	P	H	L	L	V	K	Y	H	S	G	F	F	V	D	MKK2	aa	
120	L	R	K	R	W	I	H	Q	L	K	N	V	I	R	Y	N	S	D	L	V	Q	K	Y	H	P	C	F	W	I	D	hAtk	(X58957)	
98	S	R	Q	R	W	V	L	A	L	K	E	E	T	R	N	N	S	L	V	P	K	Y	H	P	N	F	W	M	D	hTKT	(L10717)		
17	S	R	D	R	W	V	K	K	L	K	E	E	T	K	N	N	N	I	M	I	K	Y	H	P	K	F	W	A	D	mTec	(X5663)		
128	G	K	F	L	C	C	Q	Q	S	C	K	A	A	P	G	C	T	L	W	E	A	Y	A	N	L	H	T	A	V	N	MKK2	aa	
150	G	Q	Y	L	C	C	S	Q	T	A	K	N	A	M	G	C	Q	I	L	E	N	R	N	G	S	L	K	P	G	S	hAtk	(X58957)	
128	G	K	W	R	C	C	S	Q	L	E	K	L	A	T	G	C	A	Q	Y	D	-	-	-	-	-	-	-	-	-	-	hTKT	(L10717)	
47	G	S	Y	Q	C	C	R	Q	T	E	K	L	A	P	G	C	E	K	Y	N	L	F	E	S	S	I	-	-	-	-	mTec	(X5663)	
158	E	E	K	H	R	V	P	T	F	P	D	R	V	L	K	I	P	R	A	V	P	V	L	K	M	D	A	P	S	S	MKK2	aa	
180	S	H	R	K	T	K	K	P	L	P	P	-	-	-	-	T	P	E	E	D	Q	I	L	K	K	P	L	P	P	E	hAtk	(X58957)	
149	T	K	N	A	S	K	K	P	L	P	P	-	-	-	-	T	P	E	D	N	R	-	-	-	-	-	-	-	-	hTKT	(L10717)		
73	-	-	-	-	-	R	K	T	L	P	P	-	-	-	-	A	P	E	-	-	-	-	I	K	K	R	R	P	P	-	mTec	(X5663)	
188	S	T	T	L	A	Q	Y	D	N	E	S	K	K	N	Y	G	S	Q	P	P	S	S	S	T	S	L	A	Q	Y	D	MKK2	aa	
206	P	A	A	A	P	V	S	T	S	E	L	K	K	-	-	-	-	-	-	-	-	-	-	V	V	A	L	Y	D	hAtk	(X58957)		
166	-	-	-	R	P	L	W	E	P	E	E	T	V	-	-	-	-	-	-	-	-	-	-	V	I	A	L	Y	D	hTKT	(L10717)		
89	P	P	I	P	P	E	E	E	N	T	E	E	I	-	-	-	-	-	-	-	-	-	-	-	V	V	A	M	Y	D	mTEC	(X5663)	

FIG.10A

Title: NOVEL
MEGAKARYOCYTIC PROTEIN
TYROSINE KINASES

Inventor(s): Axel ULLRICH et al.

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218	S	N	S	K	K	I	Y	G	S	Q	P	N	F	N	M	Q	Y	I	P	R	E	D	F	P	-	D	W	W	Q	V	MKK2	aa
225	Y	M	P	M	N	A	N	D	L	Q	L	R	K	G	D	E	Y	F	I	L	E	E	S	N	L	P	W	W	R	A	hAtk	(X58957)
182	Y	Q	T	N	D	P	Q	E	L	A	L	R	R	N	E	E	Y	C	L	L	D	S	S	E	I	H	W	W	R	V	hTKT	(L10717)
108	F	Q	A	T	E	A	H	D	L	R	L	E	R	G	Q	E	Y	I	L	E	K	N	D	L	H	W	W	R	A	mTec	(X5663)	
247	R	K	L	K	S	S	S	S	E	D	V	A	S	S	N	Q	K	E	R	N	V	N	H	T	T	S	K	I	S	MKK2	aa	
255	R	D	-	-	K	N	G	Q	E	G	Y	I	P	S	N	Y	V	T	E	-	A	-	-	-	-	-	-	-	-	hAtk	(X58957)	
212	Q	D	-	-	R	N	G	H	E	G	Y	V	P	S	S	Y	L	V	E	K	S	-	-	-	-	-	-	-	-	hTKT	(L10717)	
138	R	D	-	-	K	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	mTec	(X5663)	
277	W	E	F	P	E	S	S	S	S	E	E	E	N	L	D	D	Y	D	W	F	A	G	N	I	S	R	S	Q	S	MKK2	aa	
273	-	-	-	-	-	-	-	-	-	-	E	D	S	I	E	M	Y	E	W	Y	S	K	H	M	T	R	S	Q	A	hAtk	(X58957)	
231	-	-	-	-	-	-	-	-	-	-	P	N	N	L	E	T	Y	E	W	Y	N	K	S	I	S	R	D	K	A	hTKT	(L10717)	
141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	G	W	Y	C	R	N	T	N	R	S	K	A	mTec	(X5663)	
307	E	Q	L	L	R	Q	K	G	K	E	G	A	F	M	V	R	N	S	S	Q	V	G	M	Y	T	V	S	L	F	S	MKK2	aa
292	E	Q	L	L	K	Q	E	G	K	E	G	G	F	I	V	R	D	S	S	K	A	G	K	Y	T	V	S	V	F	A	hAtk	(X58957)
250	E	K	L	L	L	D	T	G	K	E	G	A	F	M	V	R	D	S	R	T	A	G	T	Y	T	V	S	V	F	T	hTKT	(L10717)
154	E	Q	L	L	R	T	E	D	K	E	G	G	F	M	V	R	D	S	S	Q	P	G	L	Y	T	V	S	L	Y	T	mTec	(X5663)
337	K	-	A	V	N	D	K	K	G	T	V	K	H	Y	H	V	H	-	-	T	N	A	E	N	K	L	Y	L	A	E	MKK2	aa
322	K	S	T	-	G	D	P	Q	G	V	T	R	H	Y	V	V	-	-	C	S	T	P	Q	S	Q	Y	Y	L	A	E	hAtk	(X58957)
280	K	A	V	V	S	E	N	N	P	C	I	K	H	Y	H	I	K	E	T	N	D	N	P	K	R	Y	Y	V	A	E	hTKT	(L10717)
184	K	F	G	-	G	E	G	S	S	G	F	R	H	Y	H	I	K	E	T	A	T	S	P	K	K	Y	Y	L	A	E	mTec	(X5663)
364	N	Y	C	F	D	S	I	P	K	L	I	H	Y	H	Q	H	N	S	A	G	M	I	T	R	L	R	H	P	V	S	MKK3	aa
349	K	H	L	F	S	T	I	P	E	L	I	N	Y	H	Q	H	N	S	A	G	L	I	S	R	L	K	Y	P	V	S	hAtk	(X58957)
310	K	Y	V	F	D	S	I	P	L	L	I	N	Y	H	Q	H	N	G	G	L	V	T	R	L	R	Y	P	V	C	hTKT	(L10717)	
213	K	H	A	F	G	S	I	P	E	I	I	E	Y	H	K	H	N	A	A	G	L	V	T	R	L	R	Y	P	V	S	mTec	(X5663)
394	T	K	A	N	K	V	P	D	S	V	S	L	G	N	G	I	W	E	L	K	R	E	E	I	T	L	L	K	E	L	MKK2	aa
379	Q	Q	N	K	N	A	P	S	T	A	G	L	G	Y	G	S	W	E	I	D	P	K	D	L	T	F	L	K	E	L	hAtk	(X58957)
340	F	G	R	Q	K	A	P	V	T	A	G	L	R	Y	G	K	W	V	I	D	P	S	E	L	T	F	V	Q	E	I	hTKT	(L10717)
243	T	K	G	K	N	A	P	T	T	A	G	F	S	Y	D	K	W	E	I	N	P	S	E	L	T	F	M	R	E	L	mTec	(X5663)
424	G	S	G	Q	F	G	V	V	Q	L	G	K	W	K	G	Q	Y	D	V	A	V	K	M	I	K	E	G	S	M	S	MKK2	aa
409	G	T	G	Q	F	G	V	V	K	Y	G	K	W	R	G	Q	Y	D	V	A	I	K	M	I	K	E	G	S	M	S	hAtk	(X58957)
370	G	S	G	Q	F	G	L	V	H	L	G	Y	W	L	N	K	D	K	V	A	I	K	T	I	R	E	G	A	M	S	hTKT	(L10717)
273	G	S	G	L	F	G	V	V	R	L	G	K	W	R	A	Q	Y	K	V	A	I	K	A	I	R	E	G	A	M	C	mTec	(X5663)

FIG.10B

Title: NOVEL
MEGAKARYOCYTIC PROTEIN
TYROSINE KINASES
Inventor(s): Axel ULLRICH et al.
Appl. No.: 09/977,261

7261. 060702



454	E D E F F Q E A Q T M M K L S H P K L V K F Y G V C S K E Y	MKK2 aa
439	E D E F I E E A K V M M N L S H E K L V Q L Y G V C T K Q R	hA1k (X58957)
400	E E D F I E E A E V M M K L S H P K L V Q L Y G V C L E Q A	hTKT (L10717)
303	E E D F I E E A K V M M K L T H P K L V Q L Y G V C T Q Q K	mTec (X5663)
484	P I Y I V T E Y I S N G C L L N Y L R S H G K G L E P S Q L	MKK2 aa
469	P I F I I T E Y M A N G C L L N Y L R E M R H R F Q T Q Q L	hA1k (X58957)
430	P I C L V F E F M E H G C L S D Y L R T Q R G L F A A E T L	hTKT (L10717)
333	P I Y I V T E F M E R G C L L N F L R Q R Q G H F S R D M L	mTec (X5663)
514	L E M C Y D V C E G M A F L E S H Q F I H R D L A A R N C L	MKK2 aa
499	L E M C K D V C E A M E Y L E S K Q F L H R D L A A R N C L	hA1k (X58957)
460	L G M C L D V C E G M A Y L E E A C V I H R D L A A R N C L	hTKT (L10717)
363	L S M C Q D V C E G M E Y L E R N S F I H R D L A A R N C L	mTec (X5663)
544	V D R D L C V K V S D F G M T R Y V L D D Q Y V S S V G T K	MKK2 aa
529	V N D Q G V V K V S D F G L S R Y V L D D E Y T S S V G S K	hA1k (X58957)
490	V G E N Q V I K V S D F G M T R F V L D D Q Y T S S T G T K	hTKT (L10717)
393	V N E A G V V K V S D F G M A R Y V L D D Q Y T S S S G A K	mTec (X5663)
574	F P V K W S A P E V F H Y F K Y S S K S D V W A F G I L M W	MKK2 aa
559	F P V R W S P P E V L M Y S K F S S K S D I W A F G V L M W	hA1k (X58957)
520	F P V K W A S P E V F S F S R Y S S K S D V W S F G V L M W	hTKT (L10717)
423	F P V K W C P P E V F N Y S R F S S K S D V W S F G V L M W	mTec (X5663)
604	E V F S L G K Q P Y D L Y D N S Q V V L K V S Q G H R L Y R	MKK2 aa
589	E I Y S L G K M P Y E R F T N S E T A E H I A Q G L R L Y R	hA1k (X58957)
550	E V F S E G K I P Y E N R S N S E V V E D I S T G F R L Y K	hTKT (L10717)
453	E T F T E G R M P F E K N T N Y E V V T M V T R G H R L H R	mTec (X5663)
634	P H L A S D T I Y Q I M Y S C W H E L P E K R P T F Q Q L L	MKK2 aa
619	P H L A S E K V Y T I M Y S C W H E K A D E R P T F K I L L	hA1k (X58957)
580	P R L A S T H V Y Q I M N H C W K E R P E D R P A F S R L L	hTKT (L10717)
483	P K L A T K Y L Y E V M L R C W Q E R P E G R P S F E D L L	mTec (X5663)
664	S S I E P L R E K D K H	MKK2 aa
649	S N I L D V M D E E S	hA1k (X58957)
610	R Q L A E I A E S - - - - G L	hTKT (L10717)
513	R T I D E L V E C E E T F G R	mTec (X5663)

FIG.10C

Inventor(s): Axel ULLRICH et al.
Appl. No.: 09/977,261

MKK3 MPI aa
 hF yn
 eYrk

MKK3 MP1 oo
hFyn
cYrk
hSrc
hYes
hFgr
hLyn
hHck
hLck
mB1k

MKK3 MP1 aa
hFyn
cYrk
hSrc
hYes
hFgr
hLyn
hHck
hLck
mB1k

MKK3 MP1 aa
hFyn
cYrk
hSrc
hYes
hFgr
hLyn
hHck
hLck
mBlk

FIG. 11A

Title: NOVEL
MEGAKARYOCYTIC PROTEIN
TYROSINE KINASES

Inventor(s): Axel ULLRICH et al.

Appl. No.: 09/977,261

69	L	Q	V	L	D	T	L	H	E	G	W	W	F	A	R	H	L	E	K	R	R	D	G	S	S	Q	Q	L	Q	G	MKK3 MPI aa	
109	F	Q	I	L	N	S	S	E	G	D	W	W	E	A	R	S	L	T	T	G	E	T	G	-	-	-	-	-	-	-	-	hFyn
108	F	H	I	I	N	N	T	E	G	D	W	W	E	A	R	S	L	S	S	G	A	T	G	-	-	-	-	-	-	-	-	cYrk
111	L	Q	I	V	N	N	T	E	G	D	W	W	L	A	H	S	L	S	T	G	Q	T	G	-	-	-	-	-	-	-	-	hSrc
118	F	Q	I	I	N	N	T	E	G	D	W	W	E	A	R	S	I	A	T	G	K	N	G	-	-	-	-	-	-	-	-	hYes
104	F	H	I	L	N	N	T	E	G	D	W	W	E	A	R	S	L	S	S	G	K	T	G	-	-	-	-	-	-	-	-	hFgr
90	M	K	V	L	E	E	H	-	G	E	W	W	K	A	K	S	L	L	T	K	K	E	G	-	-	-	-	-	-	-	-	hLyn
84	M	V	V	L	E	E	S	-	G	E	W	W	K	A	R	S	L	A	T	R	K	E	G	-	-	-	-	-	-	-	-	hHck
88	L	R	I	L	E	Q	S	-	G	E	W	W	K	A	Q	S	L	T	T	G	Q	E	G	-	-	-	-	-	-	-	-	hLck
79	L	Q	V	L	R	S	T	-	G	D	W	W	L	A	R	S	L	V	T	G	R	E	G	-	-	-	-	-	-	-	-	mBlk
99	Y	I	P	S	N	Y	V	A	E	D	R	S	L	Q	A	E	P	W	F	F	G	A	I	G	R	S	D	A	E	K	MKK3 MPI aa	
132	Y	I	P	S	N	Y	V	A	P	V	D	S	I	Q	A	E	E	W	Y	F	G	K	L	G	R	K	D	A	E	R	hFyn	
131	Y	I	P	S	N	Y	V	A	P	V	D	S	I	Q	A	E	E	W	Y	F	G	K	I	G	R	K	D	A	E	R	cYrk	
134	Y	I	P	S	N	Y	V	A	P	S	D	S	I	Q	A	E	E	W	Y	F	G	K	I	T	R	R	E	S	E	R	hSrc	
141	Y	I	P	S	N	Y	V	A	P	A	D	S	I	Q	A	E	E	W	Y	F	G	K	M	G	R	K	D	A	E	R	hYes	
127	C	I	P	S	N	Y	V	A	P	V	D	S	I	Q	A	E	E	W	Y	F	G	K	I	G	R	K	D	A	E	R	hFgr	
112	F	I	P	S	N	Y	V	A	K	L	N	T	L	E	T	E	E	W	F	F	K	D	I	T	R	K	D	A	E	R	hLyn	
106	Y	I	P	S	N	Y	V	A	R	V	D	S	L	E	T	E	E	W	F	F	K	G	I	S	R	K	D	A	E	R	hHck	
110	F	I	P	F	N	F	V	A	K	A	N	S	L	E	P	E	P	W	F	F	K	N	L	S	R	K	D	A	E	R	hLck	
101	Y	V	P	S	N	F	V	A	P	V	E	T	L	E	V	E	K	W	F	F	R	T	I	S	R	K	D	A	E	R	mBlk	
129	Q	L	L	Y	S	E	N	K	T	G	S	F	L	I	R	E	S	E	S	Q	K	G	E	F	S	L	S	V	L	D	MKK3 MPI aa	
162	Q	L	L	S	F	G	N	P	R	G	T	F	L	I	R	E	S	E	T	T	K	G	A	Y	S	L	S	I	R	D	hFyn	
161	Q	L	L	C	H	G	N	C	R	G	T	F	L	I	R	E	S	E	T	T	K	G	A	Y	S	L	S	I	R	D	cYrk	
164	L	L	L	N	A	E	N	P	R	G	T	F	L	V	R	E	S	E	T	T	K	G	A	Y	C	L	S	V	S	D	hSrc	
171	L	L	L	N	P	G	N	Q	R	G	I	F	L	V	R	E	S	E	T	T	K	G	A	Y	S	L	S	I	R	D	hYes	
157	Q	L	L	S	P	G	N	P	Q	G	A	F	L	I	R	E	S	E	T	T	K	G	A	Y	S	L	S	I	R	D	hLyn	
142	Q	L	L	A	P	G	N	S	A	G	A	F	L	I	R	E	S	E	T	L	K	G	S	F	S	L	S	V	R	D	hHck	
136	Q	L	L	A	P	G	N	M	L	G	S	F	M	I	R	D	S	E	T	T	K	G	S	Y	S	L	S	V	R	D	hHck	
140	Q	L	L	A	P	G	N	T	H	G	S	F	L	I	R	E	S	E	S	T	A	G	S	F	S	L	S	V	R	D	hLck	
131	Q	L	L	A	P	M	N	K	A	G	S	F	L	I	R	E	S	E	S	N	K	G	A	F	S	L	S	V	K	D	mBlk	
159	-	-	-	-	-	G	A	V	V	K	H	Y	R	I	K	R	L	D	E	G	G	F	F	L	T	R	R	R	I	F	MKK3 MPI aa	
192	W	D	D	M	K	G	D	H	V	K	H	Y	K	I	R	K	L	D	N	G	G	Y	Y	I	T	T	R	A	Q	F	hFyn	
191	W	D	E	A	K	G	D	H	V	K	H	Y	K	I	R	K	L	D	S	G	G	Y	Y	I	T	T	R	A	Q	F	cYrk	
194	F	D	N	A	K	G	L	N	V	K	H	Y	K	I	R	K	L	D	S	G	G	F	Y	I	T	S	R	T	Q	F	hSrc	
201	W	D	E	I	R	G	D	N	V	K	H	Y	K	I	R	K	L	D	N	G	G	Y	Y	I	T	T	R	A	Q	F	hYes	
187	W	D	Q	T	R	G	D	H	V	K	H	Y	K	I	R	K	L	D	M	G	G	Y	Y	I	T	T	R	V	Q	F	hFgr	
172	F	D	P	V	H	G	D	V	I	K	H	Y	K	I	R	S	L	D	N	G	G	Y	Y	I	S	P	R	I	T	F	hLyn	
166	Y	D	P	R	Q	G	D	T	V	K	H	Y	K	I	R	T	L	D	N	G	G	F	Y	I	S	P	R	S	T	F	hHck	
170	F	D	Q	N	Q	G	E	V	V	K	H	Y	K	I	R	N	L	D	N	G	G	F	Y	I	S	P	R	I	T	F	hLck	
161	I	T	T	-	Q	G	E	V	V	K	H	Y	K	I	R	S	L	D	N	G	G	Y	Y	I	S	P	R	I	T	F	mBlk	

FIG.11B

Title: NOVEL
MEGAKARYOCYTIC PROTEIN
TYROSINE KINASES

Inventor(s): Axel ULLRICH et al.
Appl. No.: 09/977,261

09977261 .060702

184	S	T	L	N	E	F	V	S	H	Y	T	K	T	S	D	G	L	C	V	K	L	G	K	P	C	L	K	I	Q	V	MKK3 MPI	oo
222	E	T	L	Q	Q	L	V	Q	H	Y	S	E	R	A	A	G	L	C	C	R	L	V	V	P	C	H	K	G	M	-	hFyn	
221	D	T	I	Q	Q	L	V	Q	H	Y	I	E	R	A	A	G	L	C	C	R	L	A	V	P	C	P	K	G	T	-	cYrk	
224	N	S	L	Q	Q	L	V	A	Y	Y	S	K	H	A	D	G	L	C	H	R	L	T	T	V	C	P	T	S	K	-	hSrc	
231	D	T	L	Q	K	L	V	K	H	Y	T	E	H	A	D	G	L	C	H	K	L	T	T	V	C	P	T	V	K	-	hYes	
217	N	S	V	Q	E	L	V	Q	H	Y	M	E	V	N	D	G	L	C	N	L	L	I	A	P	C	T	I	M	K	-	hFgr	
202	P	C	I	S	D	M	I	K	H	Y	Q	K	Q	A	D	G	L	C	R	R	L	E	K	A	C	I	S	P	K	-	hLyn	
196	S	T	L	Q	E	L	V	D	H	Y	K	K	G	N	D	G	L	C	Q	K	L	S	V	P	C	M	S	S	K	-	hHck	
200	P	G	L	H	E	L	V	R	H	Y	T	N	A	S	D	G	L	C	T	R	L	S	R	P	C	Q	T	Q	K	-	hLck	
190	P	T	L	Q	A	L	V	Q	H	Y	S	K	K	G	D	G	L	C	Q	K	L	T	L	P	C	V	N	L	A	-	mBik	

214	P	A	P	F	D	L	S	Y	K	T	V	D	Q	W	E	I	D	R	N	S	I	Q	L	L	K	R	L	G	S	G	MKK3 MPI	oo
251	P	R	L	T	D	L	S	V	K	T	K	D	V	W	E	I	P	R	E	S	L	Q	L	I	K	R	L	G	N	G	hFyn	
250	P	K	L	A	D	L	S	V	K	T	K	D	V	W	E	I	P	R	E	S	L	Q	L	L	Q	K	L	G	N	G	cYrk	
253	P	Q	T	Q	G	L	A	-	-	-	K	D	A	W	E	I	P	R	E	S	L	R	L	E	V	K	L	G	Q	G	hSrc	
260	P	Q	T	Q	G	L	A	-	-	-	K	D	A	W	E	I	P	R	E	S	L	R	L	E	V	K	L	G	Q	G	hYes	
246	P	Q	T	L	G	L	A	-	-	-	K	D	A	W	E	I	S	R	S	S	I	T	L	E	R	R	L	G	T	G	hFgr	
231	P	Q	-	-	-	-	K	P	W	D	K	D	A	W	E	I	P	R	E	S	I	K	L	V	K	R	L	G	A	G	hLyn	
225	P	Q	-	-	-	-	K	P	W	E	K	D	A	W	E	I	P	R	E	S	L	K	L	E	K	K	L	G	A	G	hHck	
229	P	Q	-	-	-	-	K	P	W	W	E	D	E	W	E	V	P	R	E	T	L	K	L	V	E	R	L	G	A	G	hLck	
219	P	K	-	-	-	-	N	L	W	A	Q	D	E	W	E	I	P	R	Q	S	L	K	L	V	R	K	L	G	S	G	mBik	

244	Q	F	G	E	V	W	E	G	L	W	N	N	T	T	P	V	A	V	K	T	L	K	P	G	S	M	D	P	N	D	MKK3 MPI	oo
281	Q	F	G	E	V	W	M	G	T	W	N	G	N	T	K	V	A	I	K	T	L	K	P	G	T	M	S	P	E	S	hFyn	
280	Q	F	G	E	V	W	M	G	T	W	N	G	T	T	K	V	A	V	K	T	L	K	P	G	T	M	S	P	E	A	cYrk	
280	C	F	G	E	V	W	M	G	T	W	N	G	T	T	R	V	A	I	K	T	L	K	P	G	T	M	S	P	E	A	hSrc	
287	C	F	G	E	V	W	M	G	T	W	N	G	T	T	K	V	A	I	K	T	L	K	P	G	T	M	P	E	A	hYES		
273	C	F	G	D	V	W	L	G	T	W	N	G	S	T	K	V	A	V	K	T	L	K	P	G	T	M	S	P	K	A	hFgr	
257	Q	F	G	E	V	W	M	G	Y	Y	N	N	S	T	K	V	A	V	K	T	L	K	P	G	T	M	S	V	Q	A	hLyn	
251	Q	F	G	E	V	W	M	A	T	Y	N	K	H	T	K	V	A	V	K	T	M	K	P	G	S	M	S	V	E	A	hHck	
255	Q	F	G	E	V	W	M	G	Y	Y	N	G	H	T	K	V	A	V	K	S	L	K	Q	G	S	M	S	P	D	A	hLck	
245	Q	F	G	E	V	W	M	G	Y	Y	K	N	N	M	K	V	A	T	K	T	L	K	E	G	T	M	S	P	E	A	mBik	

274	F	L	R	E	A	Q	I	M	K	N	L	R	H	P	K	L	I	Q	L	Y	A	V	C	T	L	E	D	P	I	Y	MKK3 MPI	oo
311	F	L	E	E	A	Q	I	M	K	K	L	K	H	D	K	L	V	Q	L	Y	A	V	V	S	-	E	E	P	I	Y	hFyn	
310	F	L	E	E	A	Q	I	M	K	R	L	R	H	D	K	L	V	Q	L	Y	A	V	V	S	-	E	E	P	I	Y	cYrk	
310	F	L	Q	E	A	Q	V	M	K	K	L	R	H	E	K	L	V	Q	L	Y	A	V	V	S	-	E	E	P	I	Y	hSrc	
317	F	L	Q	E	A	Q	I	M	K	K	L	R	H	D	K	L	V	P	L	Y	A	V	V	S	-	E	E	P	I	Y	hYes	
303	F	L	E	E	A	Q	V	M	K	L	L	R	H	D	K	L	V	Q	L	Y	A	V	V	S	-	E	E	P	I	Y	hFgr	
287	F	L	E	E	A	N	L	M	K	T	L	Q	H	D	K	L	V	R	L	Y	A	V	V	T	R	E	E	P	I	Y	hLyn	
281	F	L	A	E	A	N	V	M	K	T	L	Q	H	D	K	L	V	K	L	H	A	V	V	T	K	E	-	P	I	Y	hHck	
285	F	L	A	E	A	N	L	M	K	Q	L	Q	H	Q	R	L	V	R	L	Y	A	V	V	T	-	Q	E	P	I	Y	hLck	
275	F	L	G	E	A	N	V	M	K	T	L	Q	H	E	R	L	V	R	L	Y	A	V	V	T	R	E	-	P	I	Y	mBik	

FIG.11C

304	I	I	T	E	L	M	R	H	G	S	L	Q	E	Y	L	Q	N	D	T	G	S	K	I	H	L	T	Q	Q	V	D	MKK3 MPI	aa
340	I	V	T	E	Y	M	N	K	G	S	L	L	D	F	L	K	D	G	E	G	R	A	L	K	L	P	N	L	V	D	hFyn	
339	I	V	T	E	F	M	S	Q	G	S	L	L	D	F	L	K	D	G	D	G	R	Y	L	K	L	P	Q	L	V	D	cYrk	
339	I	V	T	E	Y	M	S	K	G	S	L	L	D	F	L	K	G	E	T	G	K	Y	L	R	L	P	Q	L	V	D	hSrc	
346	I	V	T	E	F	M	S	K	G	S	L	L	D	F	L	K	E	G	D	G	K	Y	L	K	L	P	Q	L	V	D	hYes	
332	I	V	T	E	F	M	C	H	G	S	L	L	D	F	L	K	N	P	E	G	Q	D	L	R	L	P	Q	L	V	D	hFgr	
317	I	I	T	E	Y	M	A	K	G	S	L	L	D	F	L	K	S	D	E	G	G	K	V	L	L	P	K	L	I	D	hLyn	
310	I	I	T	E	F	M	A	K	G	S	L	L	D	F	L	K	S	D	E	G	S	K	Q	P	L	P	K	L	I	D	hHck	
314	I	I	T	E	Y	M	E	N	G	S	L	V	D	F	L	K	T	P	S	G	I	K	L	T	I	N	K	L	L	D	hLck	
304	I	V	T	E	Y	M	A	R	G	C	L	L	D	F	L	K	T	D	E	G	S	R	L	S	L	P	R	L	I	D	mBlk	

334	M	A	A	Q	V	A	S	G	M	A	Y	L	E	S	R	N	Y	I	H	R	D	L	A	A	R	N	V	L	V	G	MKK3 MPI	aa
370	M	A	A	Q	V	A	A	G	M	A	Y	I	E	R	M	N	U	I	H	R	D	L	R	S	A	N	I	L	V	G	hFyn	
369	M	A	A	Q	I	A	A	G	M	A	Y	I	E	R	M	N	Y	I	H	R	D	L	R	A	A	N	I	L	V	G	cYrk	
369	M	A	A	Q	I	A	S	G	M	A	Y	V	E	R	M	N	Y	V	H	R	D	L	R	A	A	N	I	L	V	G	hSrc	
376	M	A	A	Q	I	A	D	G	M	A	Y	I	E	R	M	N	Y	I	H	R	D	L	R	A	A	N	I	L	V	G	hYes	
362	M	A	A	Q	V	A	E	G	M	A	Y	M	E	R	M	N	Y	I	H	R	D	L	R	A	A	N	I	L	V	G	hFgr	
347	F	S	A	Q	I	A	E	G	M	A	Y	I	E	R	K	N	Y	I	H	R	D	L	R	A	A	N	V	L	V	S	hLyn	
340	F	S	A	Q	I	A	E	G	M	A	F	I	E	Q	R	N	Y	I	H	R	D	L	R	A	A	N	I	L	V	S	hHck	
344	M	A	A	Q	I	A	E	G	M	A	F	I	E	E	R	N	Y	I	H	R	D	L	R	A	A	N	I	L	V	S	hLck	
334	M	S	A	Q	V	A	E	G	M	A	Y	I	E	R	M	N	S	I	H	R	D	L	R	A	A	N	I	L	V	S	mBlk	

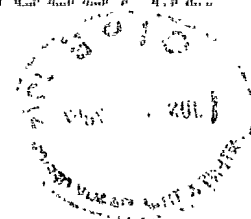
364	E	H	N	I	Y	K	V	A	D	F	G	L	A	R	V	F	K	V	D	N	E	D	I	Y	E	S	R	H	E	I	MKK3 MPI	aa
400	N	G	L	I	C	K	I	A	D	F	G	L	A	R	L	I	-	-	-	E	D	N	E	Y	T	A	R	Q	G	A	hFyn	
399	D	N	L	V	C	K	I	A	D	F	G	L	A	R	L	I	-	-	-	E	D	N	E	Y	T	A	R	Q	G	A	cYrk	
399	E	N	L	V	C	K	V	A	D	F	G	L	A	R	L	I	-	-	-	E	D	N	E	Y	T	A	R	Q	G	A	hSrc	
406	E	N	L	V	C	K	I	A	D	F	G	L	A	R	L	I	-	-	-	E	D	N	E	Y	T	A	R	Q	G	A	hYes	
392	E	R	L	A	C	K	I	A	D	F	G	L	A	R	L	I	-	-	-	K	D	E	Y	N	P	C	Q	G	S	hFgr		
377	E	S	L	M	C	K	I	A	D	F	G	L	A	R	V	I	-	-	-	E	D	N	E	Y	T	A	R	E	G	A	hLyn	
370	A	S	L	V	C	K	I	A	D	F	G	L	A	R	V	I	-	-	-	E	D	N	E	Y	T	A	R	E	G	A	hHck	
374	D	T	L	S	C	K	I	A	D	F	G	L	A	R	L	I	-	-	-	E	D	N	E	Y	T	A	R	E	G	A	hLck	
364	E	T	L	C	C	K	I	A	D	F	G	L	A	R	I	I	-	-	-	-	D	S	E	Y	T	A	Q	E	G	A	mBlk	

394	K	L	P	V	K	W	T	A	P	E	A	I	R	S	N	K	F	S	I	K	S	D	V	W	S	F	G	I	L	L	MKK3 MPI	aa
427	K	F	P	I	K	W	T	A	P	E	A	A	L	Y	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hFyn	
426	K	F	P	I	K	W	T	A	P	E	A	A	L	F	G	K	F	T	I	K	S	D	V	W	S	F	G	I	L	L	cYrk	
426	K	F	P	I	K	W	T	A	P	E	A	A	L	Y	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hSrc	
433	K	F	P	I	K	W	T	A	P	E	A	A	L	Y	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	Q	hYes	
419	K	F	P	I	K	W	T	A	P	E	A	A	L	F	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hFgr	
404	K	F	P	I	K	W	T	A	P	E	A	I	N	F	G	C	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hLyn	
397	K	F	P	I	K	W	T	A	P	E	A	I	N	F	G	S	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hHck	
401	K	F	P	I	K	W	T	A	P	E	A	I	N	Y	G	T	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hLck	
390	K	F	P	I	K	W	T	A	P	E	A	I	H	F	G	V	F	T	I	K	A	D	V	W	S	F	G	V	L	L	mBlk	

FIG.11D

Title: NOVEL
MEGAKARYOCYTIC PROTEIN
TYROSINE KINASES
Inventor(s): Axel ULLRICH et al.
Appl. No.: 09/977,261

09/977261 060702



424	Y	E	I	I	T	Y	G	K	M	P	Y	S	G	M	T	G	A	Q	V	I	Q	M	L	A	Q	N	Y	R	L	P	MKK3 MPI aa
457	T	E	L	V	T	K	G	R	V	P	Y	P	G	M	N	N	R	E	V	L	E	Q	V	E	R	G	Y	R	M	P	hFyn
456	T	E	L	V	T	K	G	R	V	P	Y	P	G	M	N	N	R	E	V	L	E	Q	V	E	R	G	Y	R	M	Q	cYrk
456	T	E	L	T	T	K	G	R	V	P	Y	P	G	M	V	N	R	E	V	L	D	Q	V	E	R	G	Y	R	M	P	hSrc
463	T	E	L	V	T	K	G	R	V	P	Y	P	G	M	V	N	R	E	V	L	E	Q	V	E	R	G	Y	R	M	P	hYes
449	T	E	L	I	T	K	G	R	I	P	Y	P	G	M	N	K	R	E	V	L	E	Q	V	E	Q	G	Y	H	M	P	hFgr
434	Y	E	I	V	T	Y	G	K	I	P	Y	P	G	R	T	N	A	D	V	M	T	A	L	S	Q	G	Y	R	M	P	hLyn
427	M	E	I	V	T	Y	G	R	I	P	Y	P	G	M	S	N	P	E	V	I	R	A	L	E	R	G	Y	R	M	P	hHck
431	T	E	I	V	T	H	G	R	I	P	Y	P	G	M	T	N	P	E	V	I	Q	N	L	E	R	G	Y	R	M	V	hLck
420	M	V	I	V	T	Y	G	R	V	P	Y	P	G	M	S	N	P	E	V	I	R	S	L	E	H	G	Y	R	M	P	mBlk
454	Q	P	S	N	C	P	Q	Q	F	Y	N	-	I	M	L	E	C	W	N	A	E	P	K	E	R	P	T	F	E	T	MKK3 MPI aa
487	C	P	Q	D	C	P	I	S	L	H	-	E	L	M	I	H	C	W	K	K	D	P	E	E	R	P	T	F	E	Y	hFyn
486	C	P	G	G	C	P	P	S	L	H	-	D	V	M	V	Q	C	W	K	R	E	P	E	E	R	P	T	F	E	Y	cYrk
486	C	P	P	E	C	P	E	S	L	H	-	D	L	M	C	Q	C	W	R	K	E	P	E	E	R	P	T	F	E	Y	hSrc
493	C	P	Q	G	C	P	E	S	L	H	-	E	L	M	N	L	C	W	K	K	D	P	D	E	R	P	T	F	E	Y	hYes
479	C	P	P	G	C	P	A	S	L	Y	-	E	A	M	E	Q	T	W	R	L	D	P	E	E	R	P	T	F	E	Y	hFgr
464	R	V	E	N	C	P	D	E	L	Y	-	D	I	M	K	M	C	W	K	E	K	A	E	E	R	P	T	F	D	Y	hLyn
457	R	P	E	N	C	P	E	E	L	Y	-	N	I	M	M	R	C	W	K	N	R	P	E	E	R	P	T	F	E	Y	hHck
461	R	P	D	N	C	P	E	E	L	Y	-	Q	L	M	R	L	C	W	K	E	R	P	E	D	R	P	T	F	D	Y	hLck
450	C	P	E	T	C	P	P	E	L	Y	N	D	I	I	T	E	C	W	R	G	R	P	E	E	R	P	T	F	E	F	mBlk
483	L	R	W	K	L	E	D	Y	F	E	-	T	D	S	S	Y	S	D	A	N	N	F	I	R							MKK3 MPI aa
516	L	Q	S	F	L	E	D	Y	F	T	A	T	E	P	Q	Y	Q	P	G	E	N	-	-	-	L						hFyn
515	L	Q	S	F	L	E	D	Y	F	T	A	T	E	P	Q	Y	Q	P	G	D	N	-	-	-	Q						cYrk
515	L	Q	A	F	L	E	D	Y	F	T	S	T	E	P	Q	Y	Q	P	G	E	N	-	-	-	L						hSrc
522	I	Q	S	F	L	E	D	Y	F	T	A	T	E	P	Q	Y	Q	P	G	E	N	-	-	-	L						hYes
508	L	Q	S	F	L	E	D	Y	F	T	S	A	E	P	Q	Y	Q	P	G	D	Q	-	-	-	T						hFgr
493	L	Q	S	V	L	D	D	F	Y	T	A	T	E	G	Q	Y	Q	Q	-	-	Q	-	-	-	P						hLyn
486	I	Q	S	V	L	D	D	F	Y	T	A	T	E	S	Q	Y	Q	Q	-	-	Q	-	-	-	P						hHck
490	L	R	S	V	L	E	D	F	F	T	A	T	E	G	Q	Y	Q	P	-	-	Q	-	-	-	P						hLck
480	L	Q	S	V	L	E	D	F	Y	T	A	T	E	G	Q	Y	E	L	-	-	Q	-	-	-	P						mBlk

FIG.11E

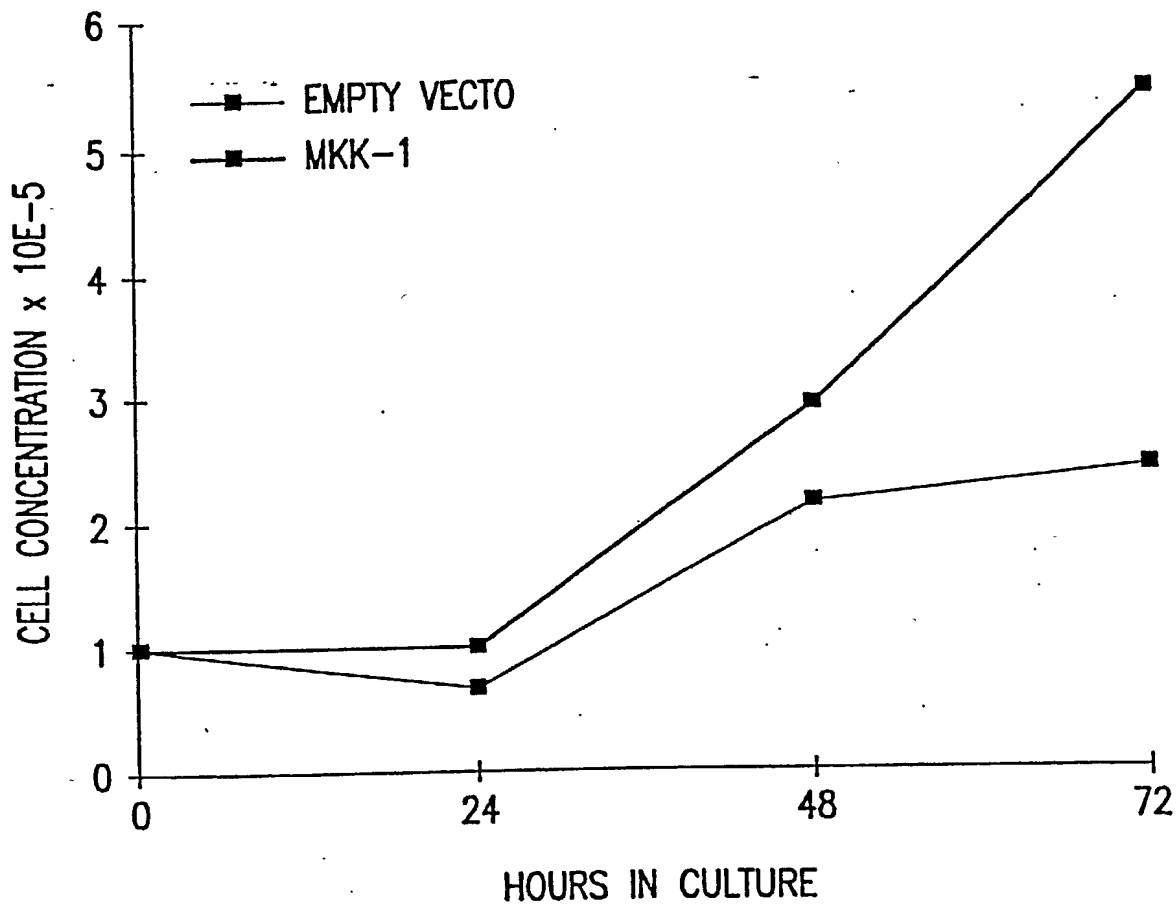


FIG.12

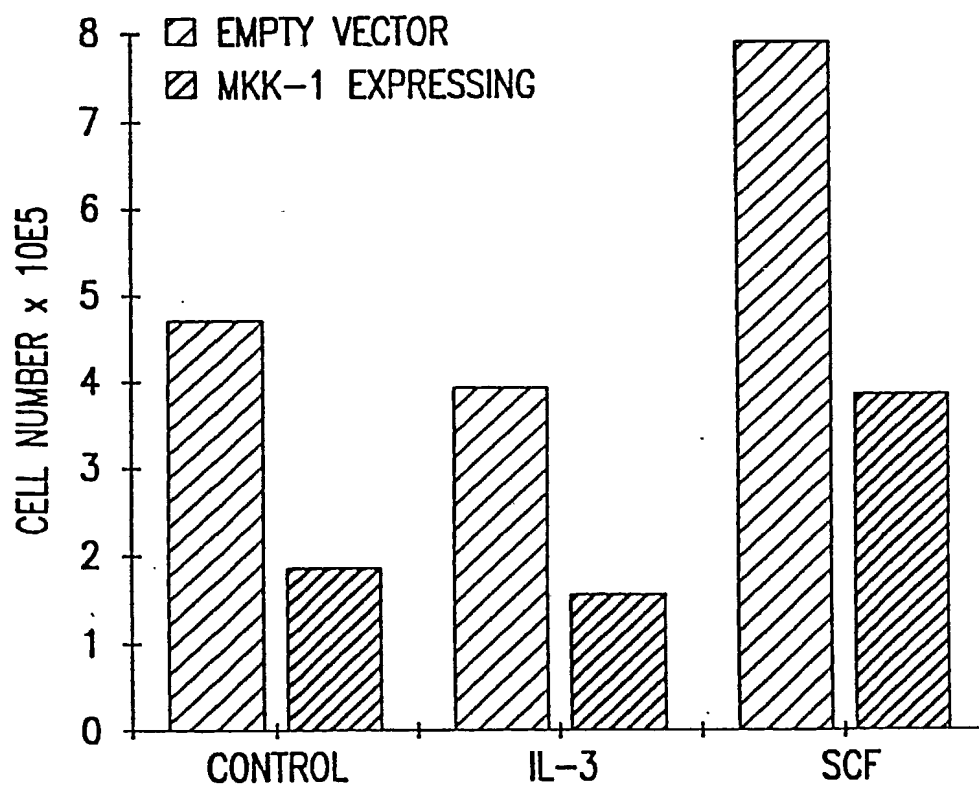
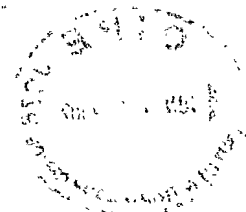


FIG.13

Title: NOVEL
MEGAKARYOCYTIC PROTEIN
TYROSINE KINASES
Inventor(s): Axel ULLRICH et al.
Appl. No.: 09/977,261

09/977,261 .060702

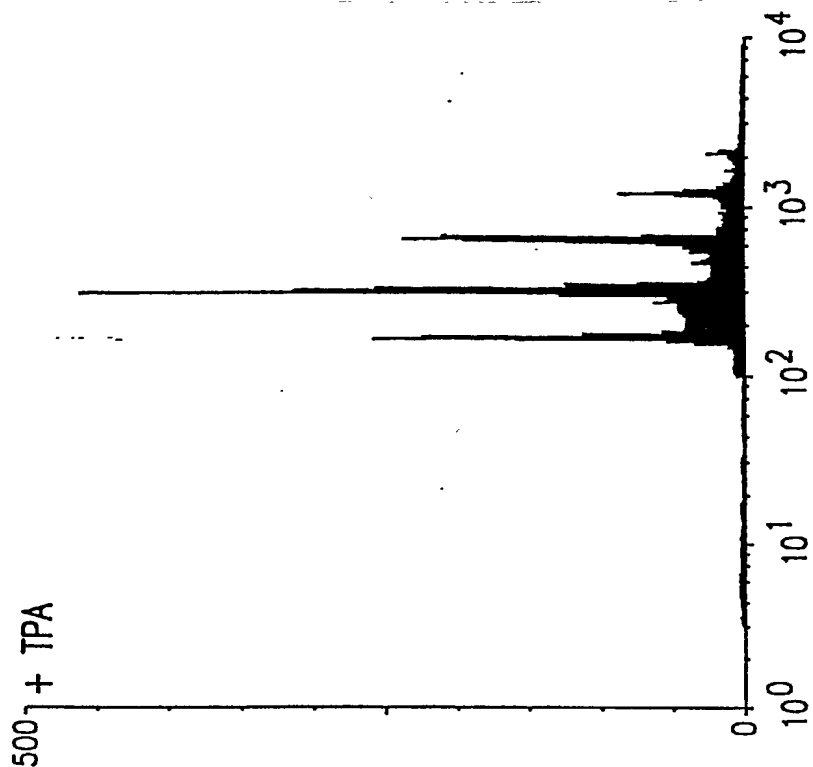


FIG.14B

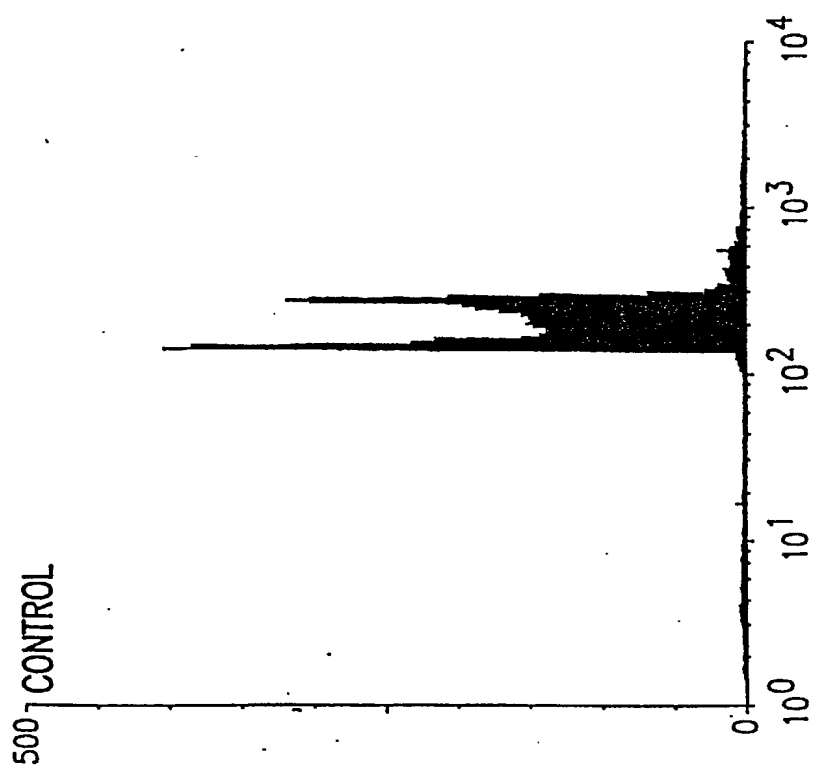


FIG.14A

Title: NOVEL
MEGAKARYOCYTIC PROTEIN
TYROSINE KINASES
Inventor(s): Axel ULLRICH et al.
Appl. No.: 09/977,261

09/977,261 .060702

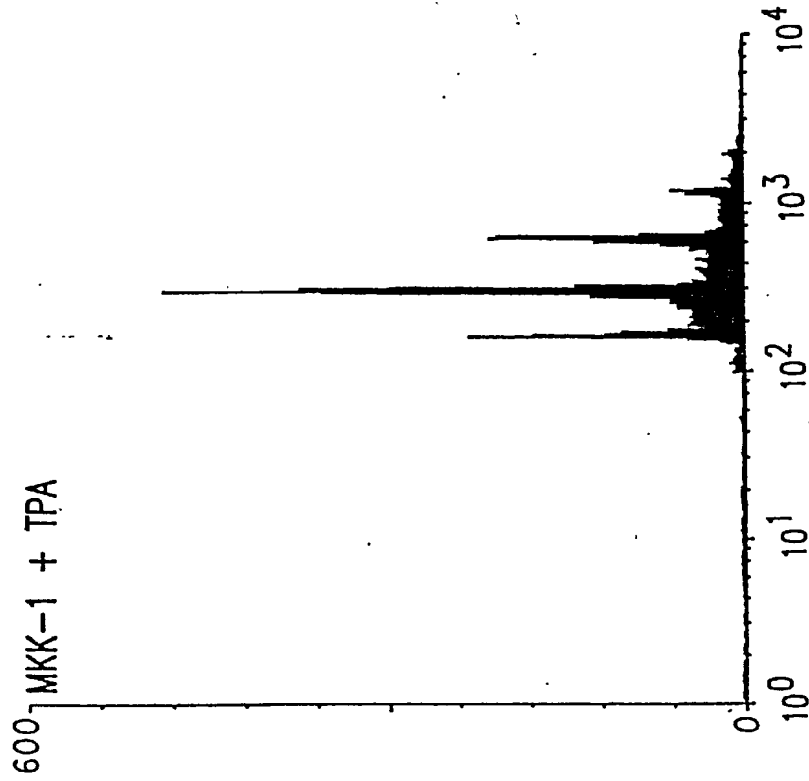


FIG.14D

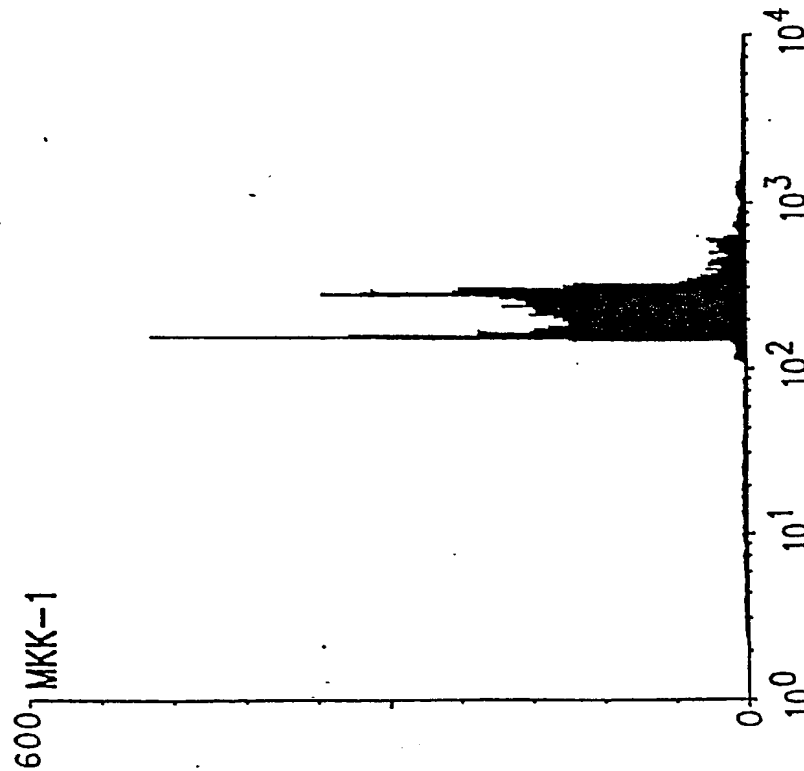


FIG.14C